Cyclic Variation in Solar Temperature Minimum Region

C. Fang et al.
Dept. of Astron., Nanjing University, China

CaII K line has been measured regularly nearly every month since 1974 at Kitt Peak. It is known that the K_1 component of the CaII K line is formed in the temperature minimum region (TMR) of the solar atmosphere. Our study on the data of CaII K line profiles over nearly two solar cycles indicates that both in full disc integrated spectra and in disc-center spectra, the distance between red K_1 and blue K_1 and its mean intensity show periodical variations, but the former fluctuates in the same way as the sunspot number does, while the later has a time delay with respect to the sunspot number. Non-LTE computation indicates a cyclic temperature variation of about 15 K of the TMR in the quiet-Sun atmosphere and a cyclic variation of about 15–20 km of the position of the TMR.

Co-authors: Y. X. Zhang, M. D. Ding, & W. C. Livingson